

Lending a hand Making spatial data more useful for NT natural resource managers & planners

Natural resource managers in northern Australia, from pastoralists to Indigenous ranger groups and government planners, want better ways of evaluating their practices. Are patterns of frequent wildfire being reduced? Are indicators of landscape health being maintained?

The Infonet website (www.infonet.org.au) will help here by providing easy access to the latest NRM spatial data for north Australia and enabling people to use this data to produce reliable outputs useful for NRM planning that would normally require time-consuming use of GIS software.

Using the Infonet website:

1. Users to select an area of interest – a pastoral station or a block of land that is to be developed in some way – using an interactive map.
2. The user can then request spatial analyses useful for evaluating the management of that area – such as fire histories, lists of threatened species and weeds found in or near the area.
3. The relevant data such as fire scar layers and observations of threatened species and weeds are then sourced from government databases and maps, species lists and graphs are created and set out in easily printable reports or booklets.



The Infonet website provides some significant benefits:

Easy access to useful analysis of NRM spatial data

Many land managers and planners in north Australia are not able to easily use GIS software and access spatial data to produce analyses relevant to their NRM needs. This site provides an easy to follow menu that provides commonly needed analyses of spatial data quickly.



Reliable and consistent results

Because the site uses cadastre-based boundaries and displays analyses checked by relevant researchers, the results are consistent and as accurate as the data permits. These results are also based on the latest spatial datasets available from government databases.



Flexible, user-driven website interface

While the data used by the site are managed and updated by government custodians, the web interface and the application will be managed by a communications unit with links to user networks. This will allow the interface and the web application tools to be modified through feedback from end-users.

Integrated with non-spatial data

Spatial data are made more useful by integrating them with non-spatial data. For example, the locations of threatened species observations are then used to generate booklets of management advice and profiles for each species observed in or near a selected area.



www.infonet.org.au

Frequently-Asked-Questions (September 2008)

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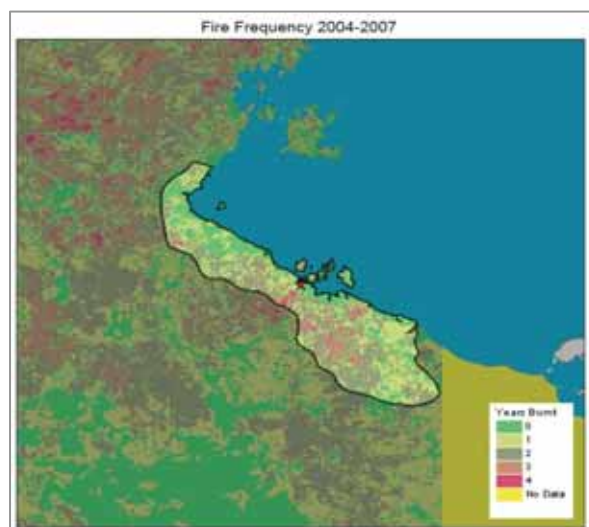
What does this website do?

The *NT NRM Snapshot* website provides land managers and planners in the Northern Territory with standardized Natural Resource Management (NRM) profiles of an area in forms suitable for planning.

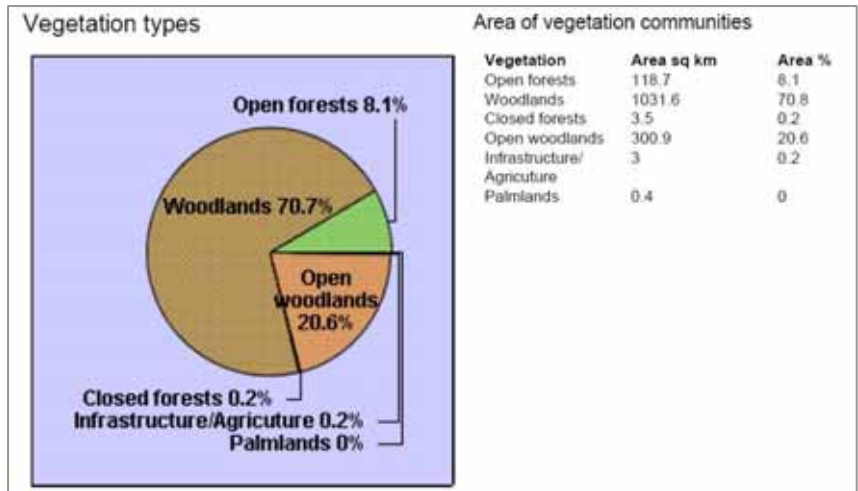
Users first select an area of interest. For areas like parks and reserves, local government areas, bioregions and the whole of the NT these can be selected automatically by selecting from menus, while other areas can be selected by tracing out a boundary on a map with the mouse cursor.

Users can the request various types of NRM information for the selected area:

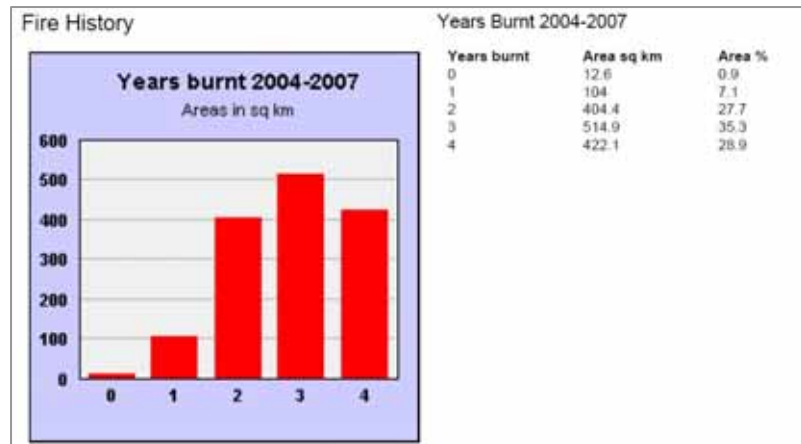
Maps that display patterns of vegetation, soils, and fire history etc. with the selected area highlighted.



Pie Charts and tables that show the areas and percentage cover of soils and vegetation etc.



Bar graphs and tables that show areas of different fire patterns



Lists of threatened species, weeds, pest animals etc. which have been recorded in or near the selected area.

Threatened species that have been recorded in the grid cell(s) in which Uluru-Kata Tjuta National Park occurs

Group	Common Name	Scientific Name	NT Status	National Status	LM ID
Reptiles	Great Desert Skink	<i>Egernia kintorei</i>	VU	VU	351205
Birds	Princess Parrot	<i>Polytelis alexandrae</i>	VU	VU	247138
Birds	Night Parrot	<i>Pezoporus occidentalis</i>	CR	EN	247103
Birds	Hooded Robin	<i>Melanodryas cucullata</i>	EN/-	EN/-	177174
Mammals	Mulgara	<i>Dasyercus cristicauda</i>	VU	VU	351695
Mammals	Golden Bandicoot	<i>Isodon auratus</i>	EN	VU	176421
Mammals	Bilby	<i>Macrotis lagotis</i>	VU	VU	177125
Mammals	Southern Marsupial Mole	<i>Notoryctes typhlops</i>	VU	EN	352105
Mammals	Mala	<i>Lagorchestes hirsutus</i>	EW	EN	351795
Mammals	Fawn Hopping-mouse	<i>Notomys cervinus</i>	EN	VU	351735
Mammals	Shark Bay Mouse	<i>Pseudomys fieldi</i>	EX	VU	351625
Mammals	Central Rock-rat	<i>Zyromys pedunculatus</i>	EN	EN	351675
Flowering Plants	Eleocharis papillosa	<i>Eleocharis papillosa</i>	V	V	null

Booklets with management guidelines for threatened species which have been recorded in or near the selected area.



These maps, charts, tables and booklets can then be used to help land managers and planners develop property plans, fire plans, submit reports, develop funding applications and other planning tasks. All this information can be created in portable document format (PDF) so it can be easily printed out.

The current *Snapshot* site can produce the following outputs:

- **General NRM Reports** that feature a climate profile, simple soil and vegetation profiles, a fire history and lists of threatened species, weeds and pest animals recorded in or near the area.
- **Fire Reports** that feature a climate profile, a vegetation profile and three types of fire history: fire frequency, late burnt frequency and time since last burnt maps.
- **Custom reports** where the user chooses what sections to include. In the future, this site could also deliver standardized profiles on an expanded range of NRM data.
- **Threatened Species Booklets** that feature management advice and photos of each threatened species found in or near the selected area, together with advice on managing habitats for threatened species.

How does this website work?

The maps, graphs, charts, tables and booklets displayed on the website are created using the latest official NRM data, largely from Government Agencies. For example, to create a map of vegetation, the website will source vegetation map information from the NRETA database, or to create a climate profile it will source data from the Bureau of Meteorology database. In this way the data behind the maps should be as up to date as the data custodians can make it.

Once the web application has the map information (also known as spatial data) it creates a map, then calculates the areas and percentages of different types of vegetation, soils, fire patterns etc. on the map and uses this information to produce pie charts, graphs and tables. For small areas these calculations may not be displayed if they are likely to be inaccurate.

Presently the sites only use a small subset of all available NRM data. For example there is no analysis of aquifer, freshwater or marine data. However, once permission has been granted by the data custodians, any reliable NRM datasets can be included on the sites.

How can I select areas that are not in the menus?

At the moment you cannot select areas that are not in the menus, like catchments, unless you know the boundaries and hand-draw them, however, any frequently used regional boundaries that are available in digital form could be added to the area-selection drop-down menus – so let us know what you need.

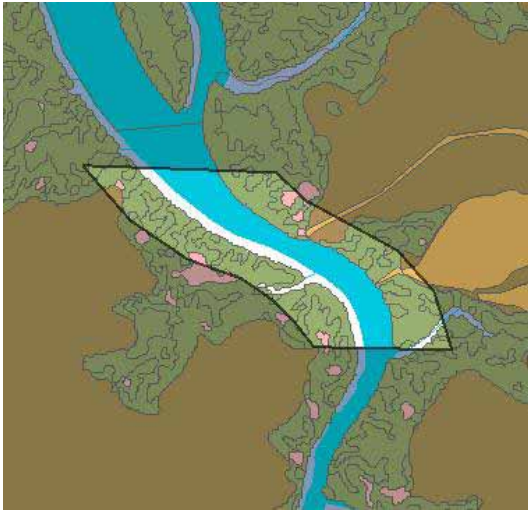
Individual properties are not included as drop-down menus for a number of reasons, including privacy considerations, the large number of properties and the fact that property owners may use boundaries that differ from those shown on official maps.

How accurate and precise are the results?

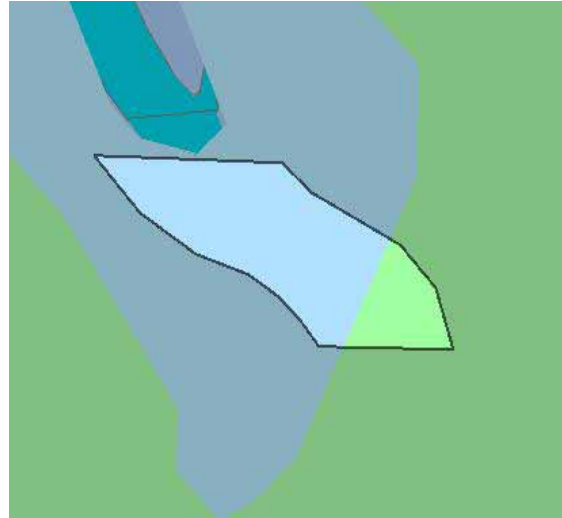
Accuracy concerns how close a measured quantity is to its true value, whereas precision concerns the degree to which repeated measurements of the quantity produce the same results. The accuracy and precision of the maps, charts and graphs depend on various factors such as the type of data used, how frequently the data are updated, and the scale at which the data are being used.

Type of data All map information has inherent inaccuracies and imprecision because of the way it is created. For example, the fire histories are created from analysis of a satellite images assisted by pattern-matching software and this process has a limited resolution and can produce errors. The vegetation and soils data are partly produced through analysis of aerial photography and these maps have a limited accuracy. The boundaries of different soil, vegetation and fire patterns can be quite precise, however, and when you are zoomed in such precision can be misleading.

For example, the soils layer is mapped at a 1:2 Million scale and is quite coarse – it should only be used for mapping across large areas. However, you could select an area that is relatively small, such as the 13 squ. km river bank area shown below. The first map is the vegetation near the area, and it clearly shows the river running down the middle and river bank vegetation. The second map shows the soils of the site and as you can see this map is so coarse it does not show the river in the area.



Vegetation map of small area



Soil map of the same small area

However, the *NRM Snapshot* application could make quite precise estimates of the proportion of the two different soil types in the above area – despite the result clearly being inaccurate. Consequently the *NRM Snapshot* site will not generate pie-charts or tables showing soil type proportions for any areas less than 400 squ. km. There are similar limits placed on the minimum size areas of other layers for which charts, graphs and tables will be produced.

To see more details of the accuracy, precision and reliability of the data behind the maps, read the description below each map and follow the metadata link.

In other cases while the data may be accurate, care needs to be taken in interpreting the information. For example, the lists of threatened species *recorded* in an area should not be used to deduce the threatened species likely to be found in an area, without knowing the survey effort behind the species records. Most of the more remote areas and many pastoral properties have not been surveyed for threatened species, which is why a list of species found in nearby map grids is also provided. Again care needs to be taken in interpreting these grid-based lists as the grids they are based on may include country that is not representative of the selected area.

Frequency of updating Some data do not need frequent updating, for example, while fire histories need to be kept updated to include the most recent years, the data for past years should not need to be updated. Similarly soils and vegetation map information should not need frequent updating, but mapping may be updated when it is undertaken with improved methods or at a finer scale. Also the extent of vegetation may change in areas subject to clearing. List of species (including threatened species, weeds and pest animals) based on grid cells are unlikely to change much, but lists of species found in smaller selected area may increase as new observations are recorded. Lists need to be

updated only when substantial new information becomes available, such as after a survey in a new area. Currency of data is usually provided in the metadata link.

How does this website work with other websites?

The NRM Snapshot website aims to complement rather than duplicate other websites used for NRM in northern Australia.

- It is not a window on all NRM spatial data held by a government department, like the *NRTEA Maps* website (www.nt.gov.au/nretamaps), rather the *Snapshot* site makes use of a subset of this data, and by analyzing the data, linking it with other data (like the species profiles and climate data) and presenting in a form suitable for planners, it adds value to the *NRTEA Maps* site.
- The focus of the *Snapshot* site is not on providing highly detailed images that help visualize landscapes like *Google Earth* or *Google Maps*, rather the *Snapshot* site produces simpler maps, graphs and charts useful for property and regional planning.
- It is not a site that is meant to be used on a daily basis to assist with operational management in the way the *NAFI* (www.firenorth.org.au) website is used by fire managers, rather it is meant to be used less frequently for planning purposes.

Who developed this website?

This website has been developed for the NRM Board of the NT by the Tropical Savannas CRC working with the NT Department of Natural Resources, Environment and The Arts.